

What is claimed:

1. A support contour for contacting and supporting a person in a sitting position, comprising:
  - relief areas defined by the support contour at locations adjacent to skin covering the ischial tuberosities, the greater trochanters and the coccyx and sacrum of the person sitting on the support contour; and
  - support areas adjacent to skin covering tissue masses on opposite lateral sides of the posterior buttocks and beneath the proximal thighs of the person; and wherein:
    - the relief areas and support areas are spaced relatively more away from and relatively more toward an anatomical shape of the person, respectively, to establish relatively less pressure on the skin in the relief areas and relatively more pressure on the skin in the support areas.
2. A support contour as defined in claim 1, wherein:
  - the relief areas substantially offload pressure on the skin covering the ischial tuberosities, the greater trochanters and the coccyx and sacrum; and
  - the support areas transfer sufficient force to the tissue masses at the lateral posterior buttocks and proximal thighs to substantially only support the person on the support contour at the support areas.
3. A support contour as defined in claim 1, wherein:
  - the relief area adjacent to the coccyx and sacrum substantially eliminates pressure on the skin adjacent to the coccyx and sacrum.
4. A support contour as defined in claim 3, wherein:
  - the relief area adjacent to the coccyx and sacrum is separated from the skin adjacent to the coccyx and sacrum.
5. A support contour as defined in claim 3, wherein:
  - the relief area adjacent to the coccyx and sacrum is spaced outwardly beyond an expected representation of the anatomical shape of the rear pelvic area of the person; and

- 5                   the support areas at the opposite lateral posterior buttocks are spaced inwardly from the expected representation of the anatomical shape of the rear pelvic area of the person.
6.       A support contour as defined in claim 1, wherein:  
          the relief area adjacent to the ischial tuberosities has sufficient longitudinal, transverse and vertical dimensions to establish the relatively less pressure on the skin covering the ischial tuberosities during forward and backward
- 5   pivoting movement of the pelvis and upper torso of the person sitting on the support contour.
7.       A support contour as defined in claim 6, wherein:  
          the dimensions of the relief area adjacent to the ischial tuberosities are also sufficient to establish the relatively less pressure on the skin covering the ischial tuberosities during lateral tilting movement of the upper torso of the person
- 5   sitting on the support contour.
8.       A support contour as defined in claim 1, wherein:  
          the relief area adjacent to the greater trochanters has sufficient longitudinal, transverse and vertical dimensions to establish the relatively less pressure on the skin covering the greater trochanters during movement within an
- 5   anticipated range of normal contacting support positions of the person on the support contour.
9.       A support contour as defined in claim 1, wherein:  
          the support areas on opposite lateral sides of the posterior buttocks contact the skin covering the tissue masses on the opposite lateral sides of the posterior buttocks to induce an upward component of support force on the pelvic
- 5   area of the person.
10.      A support contour as defined in claim 1, wherein:  
          the support areas beneath the proximal thighs function in a fulcrum-like manner to transfer weight from the legs distal to the proximal thighs in a lever-like manner through hip joints to the pelvic area of the person.
11.      A support contour as defined in claim 10, wherein:

the location of the support areas beneath the proximal thighs establishes a mechanical advantage for transferring the weight from the distal legs to the pelvic area.

12. A support contour as defined in claim 1, comprising:  
a back wall surrounding the rear pelvic area of the person;  
a center cavity located directly below the ischial tuberosities of the person sitting on the support contour, the cavity curving downwardly and  
5 longitudinally forwardly and transversely inwardly from the back wall to a generally horizontal lowermost surface area of the cavity; and wherein:

the lowermost surface area of the cavity is at a location vertically spaced below the ischial tuberosities and has longitudinal and transverse dimensions relative to the ischial tuberosities to establish the relatively less  
10 pressure on the skin covering the ischial tuberosities during movement within an anticipated range of forward, backward and side to side movement of the upper torso of the person sitting on the support contour; and

the lowermost surface area constitutes one relief area.

13. A support contour as defined in claim 12, further comprising:  
a lateral area on each opposite transverse side of the cavity and located transversely to the outside of and vertically below the greater trochanters of the person sitting on the support contour, each lateral area generally curving  
5 vertically downwardly and transversely inwardly from an outer periphery of the support contour to intersect transverse opposite sides of the cavity at a position above the ischial tuberosities of the person sitting on the support contour, the lateral relief area also extending longitudinally relative to the greater trochanters of the person sitting on the support contour; and wherein:

10 the lateral area has sufficient longitudinal, transverse and vertical dimensions to establish the relatively less pressure on the skin covering the greater trochanters during movement within an anticipated range of different contacting support positions of the person on the support contour; and

each lateral area constitutes one relief area.

14. A support contour as defined in claim 13, further comprising:

a posterior thigh protrusion area located beneath the skin covering the tissue masses at the posterior thighs of the person sitting on the support contour, each posterior thigh protrusion area located on transversely oppositely sides of a longitudinal midline through the support contour, each posterior thigh protrusion area positioned vertically above and longitudinally forward of each lateral area, each posterior thigh protrusion area defining an upwardly facing fulcrum-like contact surface at a posterior position of the thigh leg bone; and wherein:

10                   the posterior thigh protrusion areas have sufficient longitudinal, transverse and vertical dimensions to establish the relatively greater pressure on the skin covering the tissue masses at the posterior thighs;

                    the fulcrum-like contact surfaces transferring force from the legs distal to the proximal thighs in a lever-like manner through the thigh bones to  
15                   elevate the greater trochanters relative to the lateral areas while the person is sitting on the support contour; and

                    each posterior thigh protrusion area constitutes a support area.

15.     A support contour as defined in claim 12, further comprising:

                    a channel area located directly behind the coccyx and sacrum of the person sitting on the support contour, the channel area extending downwardly and longitudinally forwardly from the back wall toward the lowermost surface area of  
5                   the cavity at a transverse midline of the support contour; and wherein:

                    the channel area has dimensions extending longitudinally and transversely relative to the coccyx and sacrum to establish the relatively less pressure on the skin covering the coccyx and sacrum during an anticipated range of normal movement of the pelvic area of the person while sitting on the support  
10                   contour; and

                    the channel area constitutes a relief area.

16.     A support contour as defined in claim 15, further comprising:

                    a pelvic protrusion area located adjacent the skin covering the tissue masses at the opposite lateral posterior buttocks of the person sitting on the support contour, each pelvic protrusion area located at transversely oppositely

- 5 spaced positions from the channel area, each pelvic protrusion area generally  
curving vertically downwardly and transversely and longitudinally inwardly from the  
back wall toward the lowermost surface area, each pelvic protrusion area  
terminating vertically above the lowermost surface area, each pelvic protrusion  
area defining a forwardly and upwardly facing contact surface to contact the skin  
10 covering the tissue masses at the lateral posterior buttocks; and wherein:  
the forwardly and upwardly facing contact surfaces transferring force  
to the tissue masses at the opposite posterior buttocks to offload pressure from the  
skin covering the coccyx and sacrum while the person is sitting on the support  
contour; and  
15 each pelvic protrusion area constitutes a support area.
17. A support contour as defined in claim 16, wherein:  
the contact surfaces of the protrusion areas extend forwardly into the  
cavity compared to the channel area.
18. A support contour as defined in claim 12, further comprising:  
a pelvic protrusion area located adjacent the skin covering the tissue  
masses at the opposite lateral posterior buttocks of the person sitting on the  
support contour, each pelvic protrusion area located at transversely oppositely  
5 spaced positions from a longitudinal midline through the support contour, each  
pelvic protrusion area generally curving vertically downwardly and transversely and  
longitudinally inwardly from the back wall toward the lowermost surface area, each  
pelvic protrusion area terminating vertically above the lowermost surface area,  
each pelvic protrusion area defining a forwardly and upwardly facing contact  
10 surface to contact the skin covering the tissue masses at the lateral posterior  
buttocks; and wherein:  
the pelvic protrusion areas have sufficient longitudinal, transverse  
and vertical dimensions to establish the relatively greater pressure on the skin  
covering the tissue masses at the opposite lateral posterior buttocks;  
15 the forwardly and upwardly facing contact surfaces transferring force  
to the tissue masses at the opposite posterior buttocks to support the posterior

pelvic area substantially only at the pelvic protrusion areas while the person is sitting on the support contour; and

each pelvic protrusion area constitutes a support area.

19. A support contour as defined in claim 12, further comprising:

a posterior thigh protrusion area located beneath the skin covering the tissue masses at the posterior thighs of the person sitting on the support contour, each posterior thigh protrusion area located on transversely oppositely  
5 sides of a longitudinal midline through the support contour, each posterior thigh protrusion area positioned vertically above and longitudinally forward of the lowermost surface area, each posterior thigh protrusion area defining an upwardly facing fulcrum-like contact surface at a posterior position of the thigh leg bone; and wherein:

10 the posterior thigh protrusion areas have sufficient longitudinal, transverse and vertical dimensions to establish the relatively greater pressure on the skin covering the tissue masses at the posterior thighs;

the fulcrum-like contact surfaces transferring force from the legs distal to the proximal thighs in a lever-like manner through the thigh bones to the  
15 hip joints to support the anterior and lateral pelvic area while the person is sitting on the support contour; and

each posterior thigh protrusion area constitutes a support area.

20. A support contour as defined in claim 1 incorporated in a wheelchair seat cushion.

21. A support contour as defined in claim 1, further comprising a clearance area defined by the support contour at a location adjacent to a perineal area, to establish space for air circulation.

22. A method of configuring a support contour to contact and support a person sitting on the support contour, comprising:

defining relief areas in the support contour at locations adjacent to skin covering the ischial tuberosities, the greater trochanters and the coccyx and  
5 sacrum of the person sitting on the support contour;

defining support areas in the support contour at locations adjacent to skin covering tissue masses on opposite lateral sides of the posterior buttocks and beneath the proximal thighs of the person; and

10 positioning the relief areas and the support areas to establish a relatively greater clearance with respect to the ischial tuberosities, the greater trochanters and the coccyx and sacrum of the person sitting on the support contour compared to a relatively lesser clearance with respect to the tissue masses on the opposite lateral sides of the posterior buttocks and beneath the proximal thighs of the person sitting on the support contour.

23. A method as defined in claim 22, further comprising:

positioning the relief areas relative to the support areas to substantially offload pressure on the skin covering the ischial tuberosities, the greater trochanters and the coccyx and sacrum and to transfer the substantial  
5 majority of the support from the support contour to the tissue masses at the lateral posterior buttocks and proximal thighs.

24. A method as defined in claim 22, further comprising:

positioning the relief areas relative to the support areas to maintain the relatively less pressure on the skin covering the ischial tuberosities during forward and backward pivoting movement and lateral tilting movement of the upper  
5 torso of the person sitting on the support contour.

25. A method as defined in claim 22, further comprising:

positioning the relief areas relative to the support areas to maintain the relatively less pressure on the skin covering the greater trochanters during movement within an anticipated range of normal contacting support positions of  
5 the person on the support contour.

26. A method as defined in claim 22, further comprising:

positioning the support areas on opposite lateral sides of the posterior buttocks to contact the skin covering the tissue masses on the opposite lateral sides of the posterior buttocks to induce an upward component of support  
5 force on the pelvic area of the person.

27. A method as defined in claim 22, further comprising:

positioning the support areas beneath the proximal thighs at an elevated position relative to the relief areas below the greater trochanters, the support areas beneath the proximal thighs establishing a fulcrum from which the thigh leg bones transfer weight from the legs distal to the proximal thighs to elevate the greater trochanters relative to the relief area adjacent to the skin covering the greater trochanters.

28. A method as defined in claim 22, further comprising:  
positioning the support areas relative to the relief areas to substantially support the person relative to the support contour by force transferred to the tissue masses at the lateral posterior buttocks and at the proximal thighs;  
and

positioning the relief areas relative to the support areas to substantially offload pressure on the skin covering the ischial tuberosities, the greater trochanters and the coccyx and sacrum.

29. A method as defined in claim 28, further comprising:  
positioning the support areas on opposite lateral sides of the posterior buttocks to induce an upward component of support force on the tissue masses on the opposite lateral sides of the posterior buttocks of the person sitting on the support contour; and

positioning the support areas beneath the proximal thighs at an elevated position relative to the relief areas below the greater trochanters to establish a fulcrum from which the thigh leg bones transfer weight from the legs distal to the proximal thighs to elevate the greater trochanters relative to the relief area adjacent to the skin covering the greater trochanters of the person sitting on the support contour.

30. A method as defined in claim 22 applied to a seat cushion for wheelchair.

31. A method of supporting a person sitting on a support contour, comprising:

transferring the substantial majority of force associated with supporting the person on the support contour to skin covering tissue masses on



- 5     opposite lateral sides of the posterior buttocks and beneath the proximal thighs of  
the person while the person is sitting on the support contour; and
- substantially diminishing pressure and shear force from skin  
surrounding the ischial tuberosities, the greater trochanters and the coccyx and  
sacrum of the person seated on the support contour by transferring the sitting-  
10     associated force.
32.     A method as defined in claim 31, further comprising:  
                     substantially diminishing the force on the skin surrounding the ischial  
tuberosities during an anticipated range of forward, backward and side to side  
movement of the upper torso of the person while seated on the support contour.
33.     A method as defined in claim 31, further comprising:  
                     substantially diminishing the force on the skin surrounding the greater  
trochanters within an anticipated range of different contacting sitting positions of  
the person sitting on the support contour.
34.     A method as defined in claim 31, further comprising:  
                     substantially diminishing the force on the skin surrounding the coccyx  
and sacrum during an anticipated range of normal movement of the pelvic area of  
the person sitting on the support contour.
35.     A method as defined in claim 31, further comprising:  
                     transferring at least some of the sitting-associated force by inducing  
an upward component of force on the tissue masses on the opposite lateral sides  
of the posterior buttocks of the person sitting on the support contour.
36.     A method as defined in claim 31, further comprising:  
                     transferring weight from the legs distal to the proximal thighs in a  
lever-like manner through the thigh bones as force to elevate the greater  
trochanters while the person is seated on the support contour.
37.     A method as defined in claim 31, applied to supporting the person  
from the support contour of a wheelchair seat cushion.